

WHAT IS CLAIMED IS

1. A method for manufacturing an optical compensator on a transitional substrate comprising:
 - i) applying a first orientation layer to said transitional substrate;
 - ii) aligning said first orientation layer; and
 - iii) applying a first anisotropic liquid crystal material on said first orientation layer.
2. A method for manufacturing an optical compensator on a transitional substrate as in claim 1 wherein said transitional substrate is removed.
3. A method for manufacturing an optical compensator on a transitional substrate as in claim 2 wherein said transitional substrate is removed with a load average stress less than 75 N/m.
4. A method for manufacturing an optical compensator on a transitional substrate as in claim 2 wherein said transitional substrate is removed with a load average stress less than 10 N/m.
5. A method for manufacturing an optical compensator on a transitional substrate as in claim 1 wherein a retardation layer is applied to said transitional substrate prior to application of said first orientation layer.
6. A method for manufacturing an optical compensator on a transitional substrate as in claim 1 wherein said transitional substrate is polyethylene terephthalate (PET).
7. A method for manufacturing an optical compensator on a transitional substrate as in claim 5 wherein said retardation layer is applied by coating.

8. A method for manufacturing an optical compensator on a transitional substrate as in claim 1 wherein said compensator thickness is less than 100 micrometers.

9. A method for manufacturing an optical compensator on a transitional substrate as in claim 1 wherein said compensator thickness is less than 30 micrometers.

10. A method for manufacturing an optical compensator on a transitional substrate as in claim 5 wherein said retardation layer has a birefringence less than 10 nm.

11. A method for manufacturing an optical compensator on a transitional substrate as in claim 5 wherein said retardation layer has a birefringence between 15-150 nm.

12. A method for manufacturing an optical compensator on a transitional substrate as in claim 5 wherein said retardation layer is comprised of triacetyl cellulose (TAC).

13. A method for manufacturing an optical compensator on a transitional substrate as in claim 1 wherein said first orientation layer is applied by coating.

14. A method for manufacturing an optical compensator on a transitional substrate as in claim 1 wherein said first anisotropic liquid crystal material is applied by coating.

15. A method for manufacturing an optical compensator on a transitional substrate as in claim 5 wherein a barrier layer is applied between said retardation layer and said first orientation layer.

16. A method of manufacturing an optical compensator on a transitional substrate as in claim 2 wherein said optical compensator is applied to a liquid crystal display cell (LCD).

17. A method for manufacturing an optical compensator on a transitional substrate as in claim 1 wherein said orientation layer comprises a polyvinyl cinnamate.

18. A method for manufacturing an optical compensator on a transitional substrate as in claim 1 wherein said orientation layer is oriented through photoalignment using polarized light.

19. A method for manufacturing an optical compensator on a transitional substrate as in claim 1 wherein said orientation layer is oriented through rubbing.

20. A method for manufacturing an optical compensator on a transitional substrate as in claim 1 wherein said anisotropic layer comprises a nematic calamitic liquid crystal.

21. A method for manufacturing an optical compensator on a transitional substrate as in claim 1 wherein said anisotropic layer comprises a nematic discotic liquid crystal.

22. A method for manufacturing an optical compensator on a transitional substrate as in claim 1 wherein said anisotropic liquid crystal material is polymerizable via actinic radiation.

23. A method for manufacturing an optical compensator on a transitional substrate as in claim 1 wherein said transitional substrate is extruded.

24. A method for manufacturing an optical compensator on a transitional substrate as in claim 1 wherein said transitional substrate is cast from a solution of polymer and solvent.

25. A method for manufacturing an optical compensator on a transitional substrate as in claim 1 further comprising repeating steps i) – iii) to form a plurality of orientation layers and a plurality of anisotropic layers to form an integral component wherein an optical axis of each anisotropic layer is positioned relative to respective optical axis of said other anisotropic layers by an angle about an axis perpendicular to a plane of each of said substrates.

26. A method for manufacturing an optical compensator on a transitional substrate as in claim 1 further comprising repeating steps i) – iii) to form a second orientation layer and a second anisotropic layer to form an integral component, wherein an optical axis of said first anisotropic layer is positioned orthogonally relative to an optical axis of said second anisotropic layer about an axis perpendicular to a plane of each of said substrates.

27. A method for manufacturing an optical compensator on a transitional substrate as in claim 1 further comprising a retardation layer on top of said anisotropic layer.

28. A method for manufacturing an optical compensator on a transitional substrate as in claim 25 further comprising a retardation layer on top of said pluralities of orientation layers and a plurality of anisotropic layers.

29. A method for manufacturing an optical compensator on a transitional substrate as in claim 26 comprising a retardation layer on top of said second anisotropic layer.

30. A method for manufacturing an optical compensator on a transitional substrate as in claim 1 comprising repeating steps i) – iii) to form a second optical compensator;

bonding together said first and second optical compensators so that an optical axis of said first anisotropic layer in one optical compensator is positioned orthogonally relative to an optical axis of a second anisotropic layer in said second optical compensator about an axis perpendicular to a plane of each of said substrates; and

removing each of said transitional substrates from a compound compensation film.

31. A method for manufacturing an optical compensator comprising:

providing a transitional substrate;
applying a retardation layer to said transitional substrate;
applying a first orientation layer to said retardation layer;
aligning said first orientation layer;
applying a first anisotropic liquid crystal material on said first orientation layer;

applying a second orientation layer to said first anisotropic liquid crystal material;

aligning said second orientation layer such that an alignment direction of said second orientation layer is orthogonal with respect to an alignment direction of said first orientation layer; and

applying a second anisotropic liquid crystal material on said second orientation layer.

32. A method for manufacturing an optical compensator as in claim 31 wherein said transitional substrate is removed.

33. A method for manufacturing an optical compensator as in claim 32 wherein said optical compensator is applied to a liquid crystal display (LCD).